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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/939,330	08/24/2001	Alfred Kersch	L&L-10078	3872

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EXAMINER

FULLER, ERIC B

ART UNIT

PAPER NUMBER

1762

DATE MAILED: 12/05/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

09/939,330

Applicant(s)

KERSCH ET AL.

Examiner

Eric B Fuller

Art Unit

1762

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 29 September 2003.  
2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.  
3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-9 is/are pending in the application.  
4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.  
5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.  
6) ☒ Claim(s) 1-9 is/are rejected.  
7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.  
8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.  
10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).  
11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. §§ 119 and 120**

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
a) ☒ All b) ☐ Some \* c) ☐ None of:  
1. ☒ Certified copies of the priority documents have been received.  
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.  
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).  
\* See the attached detailed Office action for a list of the certified copies not received.  
13) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application) since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.  
a) ☐ The translation of the foreign language provisional application has been received.  
14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121 since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892)  
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)  
3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 1.  
4) ☐ Interview Summary (PTO-413) Paper No(s). \_\_\_\_\_  
5) ☐ Notice of Informal Patent Application (PTO-152)  
6) ☐ Other:

## **DETAILED ACTION**

### ***Request for Continued Examination***

The Request filed on September 29 2003 for Continued Examination (RCE) under 37 CFR 1.114 is acceptable and an RCE has been established. An action on the RCE follows.

### ***Claim Observations***

In claim 1, line 30, the claim reads "connecting the gas outlet opening". It is believed that the applicant is referring to the "further gas outlet opening" of the previous limitation as opposed to the first mention of "a gas outlet", which also inherently has an opening. Although this interpretation may be correct, further clarification is requested.

### ***Claim Rejections - 35 USC § 112***

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 1-9 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Applicant has amended claim 1 such that it reads "providing a connecting line directly connecting the gas outlet opening to one of the inlet openings...". The applicant

points to Figure 2 for support, which comprises a valve in the line. Further, the claim reads that there is a valve in the line. The specification makes no explicit reference to what is meant by "directly". Since the applicant apparently interprets a valve in the line as still constituting a "direct" connection, it is not understood what other process equipment (heaters, pumps, filters, splitters, separators, etc.) may be present while still being a "direct" connection. The metes and bounds of "directly" is not fully understood and renders the claims confusing.

***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1-3 and 5-9 are rejected under 35 U.S.C. 103(a) as being unpatentable over Vaartstra (US 6,159,855) in view of Wang et al. (US 5,871,811) in further view of Tanaka et al. (US 6,039,834).

Vaartstra teaches a process of forming ferroelectric or perovskite films by chemical vapor deposition (column 7, lines 45-55). Water vapor may be used as a reactant gas (column 11, lines 5-10), which reads on applicant's "auxiliary gas". Water has a dipole moment and, according to the applicant's specification on page 10, lines 15-20, has the property required by claim 1. The water vapor is fed by an external

supply source that is a storage container (figure 1, ref. 19). The carrier gases, precursor gases, and water vapor are all fed into the reaction chamber through a showerhead (column 12, lines 20-26). The substrate is mounted opposite the showerhead and a pump is used to exhaust the reaction chamber (figure 1, ref. 42, 46). The reference is silent in teaching the distance between the showerhead and the substrate. However, Wang teaches that by having the distance between the showerhead and the substrate be less than one centimeter, the reactants are confined to the area between the substrate and the showerhead, which results in increased reaction efficiency, increased rate of reaction, and prevents deposition everywhere except on the wafer. It would have been obvious at the time the invention was made to a person having ordinary skill in the art to use a distance of less than one centimeter for the separation between the showerhead and the substrate in the process taught by Vaartstra. By doing so, one would reap the benefits of increased reaction efficiency, increased rate of reaction, and preventing deposition everywhere except on the wafer.

The references, collectively, fail to explicitly teach providing a connecting line directly connecting the further gas outlet opening to one of the inlet openings, with a valve in the connecting line for controlling gas flow. However, Tanaka teaches an upgrade for CVD systems (abstract) that has such a configuration (column 15, lines 25-51). The benefit of using such a configuration is so that the CVD apparatus may be self-cleaning by recirculating radicals. It would have been obvious at the time the invention was made to a person having ordinary skill in the art to use the upgrade

taught by Tanaka, and the corresponding configuration, in the process taught by Vaartstra in view of Wang. By doing so, the apparatus may be made self-cleaning.

Claim 4 is rejected under 35 U.S.C. 103(a) as being unpatentable over Vaartstra (US 6,159,855) in view of Wang et al. (US 5,871,811) in further view of Tanaka et al. (US 6,039,834), as applied to claim 1 above, and further in view of Arvidson (US 5,118,485).

Vaartstra, in view of Wang and Tanaka, teaches the limitations of claim 1, as shown above, but fails to teach using a recycle stream with a pump to circulate auxiliary gas from the exit of the chamber to the inlet. However, Arvidson teaches that it is well known to recover unused reactant that has passed through a CVD process and recycle it back to the inlet streams so that there is less waste (column 2, lines 44-68). Therefore, it would have been obvious at the time the invention was made to a person having ordinary skill in the art to recycle elements of the exhaust in the process taught by Vaartstra, in view of Wang and Tanaka, with the expectation of achieving less waste.

### ***Response to Arguments***

Applicant argues that Arvidson fails to teach directly connecting the outlet to the inlet. Examiner agrees and has withdrawn the rejections accordingly. However, Tanaka teaches a configuration of directly connecting the inlet with the outlet of a CVD reactor chamber. This is used for recycling radicals in a self-cleaning process. To include the self-cleaning upgrade in the process taught by Vaartstra would have been

obvious so that the apparatus may be self-cleaned. The claims read on the configuration taught by Tanaka, as the claims only read to proved such a configuration. Applicant's arguments are moot in view of the new grounds of rejection.

***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Eric B Fuller whose telephone number is (703) 308-6544. The examiner can normally be reached on Mondays through Thursdays.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Shrive Beck, can be reached at (703) 308-2333. The fax phone number for the organization where this application or proceeding is assigned is 703 872-9310.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0661.



EBF



TIMOTHY WEEKS  
PRIMARY EXAMINER